

Evaluation of Implementing Text-Messaging Based Medication Reminders To Improve Adherence to Antiretrovirals in People Living with HIV



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Key Findings: Text messaging-based medication reminders improved virologic suppression, supported adherence, and increased patient satisfaction.

Background

- Maintaining virologic suppression through antiretroviral treatment (ART) is essential for optimizing the health outcomes of people living with HIV (PLWH) and reducing transmission risk.¹
- Virologic suppression (<200 copies/mL) requires strict adherence to ART regimens², which can be challenging particularly for those who take other medications for comorbidities.
- Text reminders are a potential tool that can support adherence.³
- To determine if implementation of text reminders from healthcare providers supported adherence and viral suppression, we piloted and implemented a customizable SMS-based medication text reminder service for eligible participants receiving care at Boston Medical Center (BMC).

Methods

- Patients (≥18 years, PLWH) were enrolled in the texting service by clinical staff at BMC from 02/19/22 to 03/08/24 (N=47).
- Participants could fully customize the timing, content, and language of their reminders. Texts could be coded to avoid disclosing specifics about ART medications or HIV status.
- Demographic and viral load (VL) data were extracted from the electronic medical record.
- McNemar's test was used to assess association between VL suppression and exposure to the texting service (N=37).
- Perceived adherence and satisfaction were assessed through optional text surveys among participants enrolled ≥30 days (N=21). Four patients elected to complete the survey and the optional follow-up phone interviews.



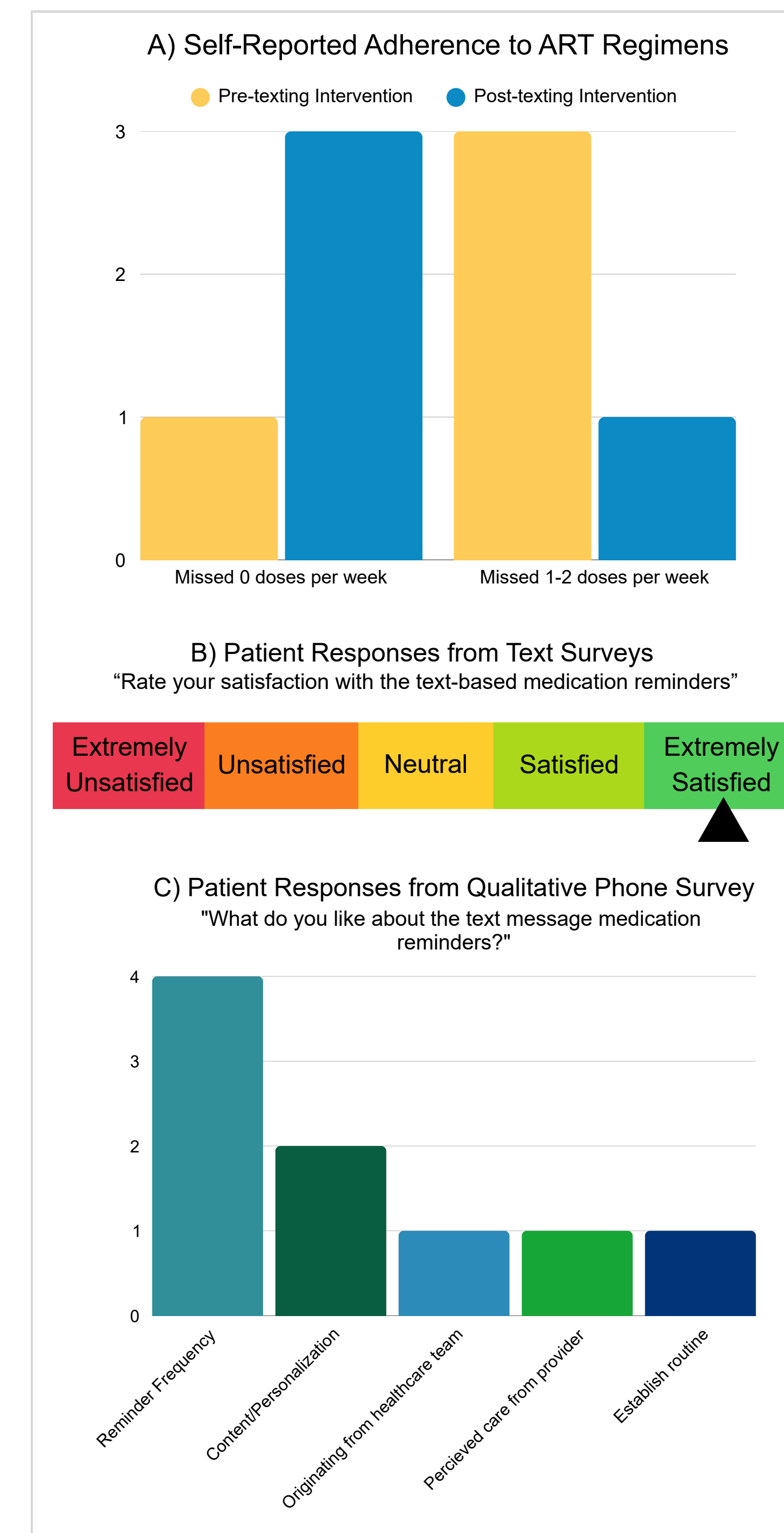
Results

Table 1. Demographic Characteristics of Texting Participants

Total patients, n	
Total patients enrolled	47
Patients included for analysis	37*
Age, years	
Median (range)	38 (20-74)
Gender, n (%)	
Cisgender women	21 (57)
Race, n (%)	
Black or African American	29 (78)
Hispanic	4 (11)
Declined or unavailable	3 (8)
White	1 (3)
Ethnicity, n (%)	
Hispanic or Latino	8 (22)
Method of Enrollment, n (%)	
Pharmacist recommendation	29 (78)
MD recommendation	5 (14)
Patient requested	3 (8)
Duration of enrollment, days	
Median (IQR)	370 (274)
Text message language, n (%)	
English	26 (70)
Spanish	4 (11)
Haitian Creole	1 (3)
Non-text only	6 (16)

*Ten patients of the original 47 enrolled were excluded from analysis due to excessive interruptions in service and were not able to receive 100% of messages.

Figure 1. Survey Results on Self-Reported Medication Adherence and Patient Satisfaction



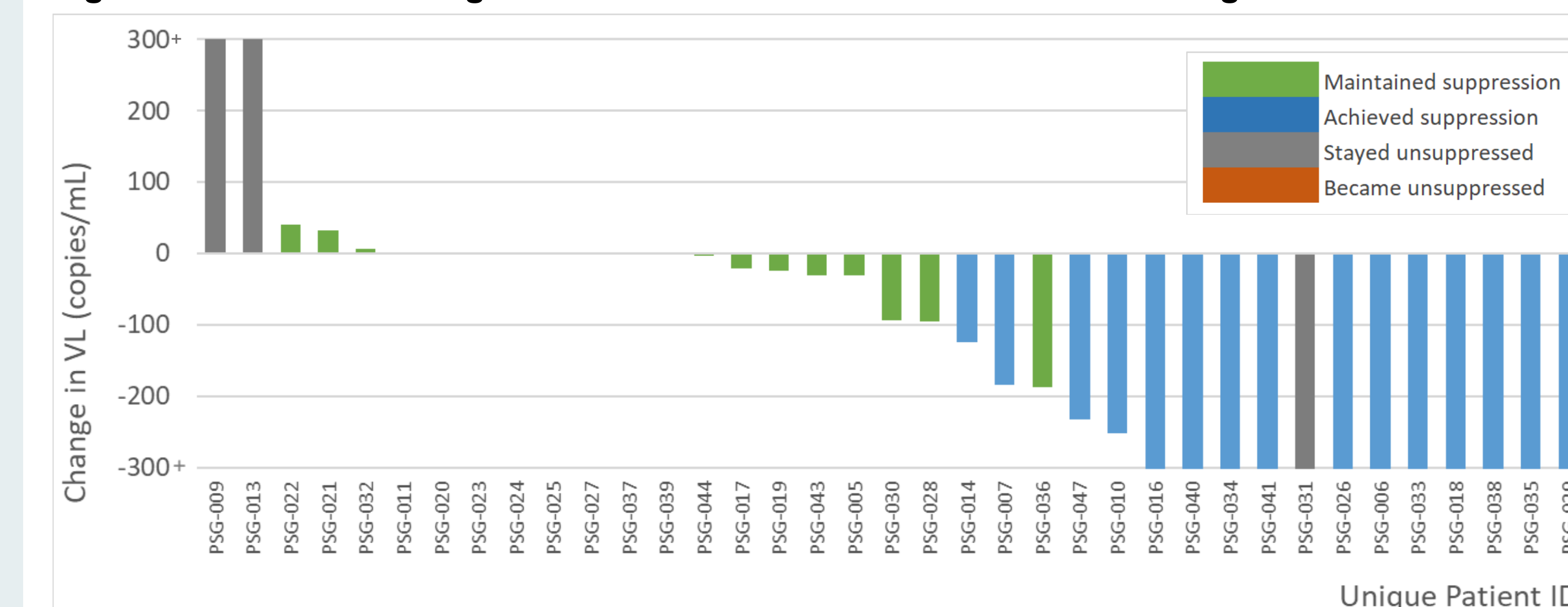
Caption: Optional text surveys completed (n=4) indicated that (A) patients reported a reduction in missed daily doses after the intervention and (B) a 100% rate of feeling extremely satisfied with the service. The same participants reported (C) positive feedback regarding the service during subsequent phone interviews.

Results Continued

Table 2. Viral Load Suppression Results

HIV Viral Load Suppression at <200 copies/mL	Post-Intervention		McNemar's Chi-squared	p-value
	VL Suppressed	VL Unsuppressed		
Pre-Intervention	19 (51.4%)	0 (0.0%)	13.064	0.0003
	15 (40.5%)	3 (8.1%)		

Figure 2. Individual Change in Viral Load for Patients Enrolled in Texting Reminder Service



Caption: Each bar represents the individual-level changes in VL for participants. Approximately 86% of patients (n=32) had either decreased or unchanged VL counts after exposure to the texting service, equivalent to achieving or maintaining suppression at <200 copies/mL. No patient started suppressed and became unsuppressed after exposure to the intervention.

Discussion

- Results suggest the implementation of customizable text medication reminders from the care-team can be used as an effective tool to achieve virologic suppression and ART adherence.
- Customizable reminders also support continued patient satisfaction, including perceived care from providers.

References

- Rodger AJ, Cambiano V, Bruun T, et al. Risk of HIV transmission through condomless sex in serodifferent gay couples with the HIV-positive partner taking suppressive antiretroviral therapy (PARTNER): final results of a multicentre, prospective, observational study. *The Lancet*. 2019;393(10189):2428-2438. doi:10.1016/S0140-6736(19)30418-0
- Thompson MA, Mugavero MJ, Amico KR, et al. Guidelines for improving entry into and retention in care and antiretroviral adherence for persons with HIV: evidence-based recommendations from an International Association of Physicians in AIDS Care panel. *Ann Intern Med*. 2012;156(11):817-833. doi:10.7326/0003-4819-156-11-201206050-00419
- Dowshen N, Kuhns LM, Johnson A, Holoyda BJ, Garofalo R. Improving adherence to antiretroviral therapy for youth living with HIV/AIDS: a pilot study using personalized, interactive, daily text message reminders. *J Med Internet Res*. 2012;14(2):e51. doi:10.2196/jmir.2015